UNITED STATES PATENT AND TRADEMARK OFFICE

BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant:	Rajesh SUNDARAM, et al.	
Serial No.:	09/467,569	
Filed:	December 20, 1999	
For:	*Method and System for Reliable Device Configuration in a Computer System*	
Group Art Unit:	2182	
Examiner:	SCHNEIDER, Joshua D.	

APPLICANT'S APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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I. REAL PARTY IN INTEREST

The present application is owned by Fujitsu Limited, a Japanese Corporation.

II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF CLAIMS

Claims 1 – 18, 21 – 26 and 28 – 30 stand rejected. This appeal is taken to all of the rejected claims.

Claims 19, 20 and 27 have been canceled.

IV. STATUS OF AMENDMENTS

No amendment has been filed subsequent to final rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 1 – Independent claim 1 is directed to a plug and play computer system comprising a computer with at least one serial bus port for coupling peripheral devices to the computer. The computer has an operating system which is able to detect when a device has been connected to the port or disconnected from the port. The operating system contains a subroutine that generates a first internal configuration message indicating that there has been a change in the number of peripheral devices connected to the computer, and a second internal configuration message indicating that the system has completed a configuration process associated with the change in the number of peripheral devices. The computer also has a configuration notification program that receives the first and second internal configuration messages and creates a visual display notifying the user in real time when it is safe to access the port.

The computer system of the present invention is generally shown in FIG. 10 and described in paragraph [0043] of the "Substitute Specification" submitted to the United States Patent and Trademark Office ("USPTO") in January 2003, in connection with the response to the first Office Action. (Hereinafter, all references to the specification of the application shall be to

the numbered paragraphs of the "Substitute Specification," which shall be referred to as the "Specification.")[1] Paragraph [0044] – [0050] of the Specification describe the function and operation of the configuration notification unit. Support for the limitation in this, and other claims, that notification is made in "real time" is found, *inter alia,* paragraphs [0009], [0053] and [0054].

Claim 7 – Independent claim 7 is directed to a computer system having at least one Universal Serial Bus ("USB") port with a compound hub connected to the USB port. The compound hub has at least one non-USB peripheral device port. The computer also has an operating system with USB interface capability, a subroutine which generates a first internal configuration message when the operating system senses a change in the USB topology, and a subroutine which generates a second internal configuration message when the operating system completes a configuration process for the changed USB topology. The computer also has a message handler that hooks the first and second configuration messages. The message handler has a message analyzer unit and a state determination unit for providing first and second signals indicating, respectively, when a configuration process is in progress and when the configuration process is complete. The computer further has an indication unit responsive to signals from the message handler that generates a visual display in real time notifying the user when it is unsafe to remove or insert a plug and play device.

The computer system having the features of claim 7 is described in the same portions of the Specification as have been identified above for claim 1. The feature of a compound hub is discussed, for example, in paragraphs [0035] – [0036], and an exemplary hub 530 is shown in FIG. 5A.

Claim 11 – Independent claim 11 is directed to a method of notifying a computer user about the status of a configuration process of an operating system loaded on a computer having

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[1] Rule 37(c)(1)(v) says that references to the specification should be made by "page and line number." However, the USPTO no longer suggests the use of line numbering and has asked applicants to use numbered paragraphs instead. See, *e.g.,* MPEP § 608.01. It is understood that paragraph numbering is intended to take the place of page and line numbering as the USPTO moves towards electronic filing wherein page and line numbers lose their meaning. Therefore, it is assumed that referring to paragraph numbers is acceptable.

at least one USB port for coupling peripheral devices to the computer. The method includes the steps of: (1) detecting an internal configuration message generated by the operating system, (2) determining if the message signals a change in the number or type of peripheral devices connected to the computer requiring notice to the user and, if so, notifying the user in real time that a configuration process is in progress, (3) detecting an internal configuration message generated by the operating system when a peripheral device configuration process has been completed, (4) determining whether the message is of the type that requires the user to be notified and, if so notifying the user in real time that the configuration process is complete, and (5) notifying the user that it is safe to change the number or type of peripheral devices coupled to the computer.

FIG. 13 is a flow chart which sets forth the steps included in claim 11, and the flow chart is described in paragraphs [0051] – [0054] of the Specification. FIG. 14 is a block diagram showing the outputs of an indication unit for notifying the user that it is safe to plug or unplug peripheral devices into the system. This is described in paragraph [0055] of the Specification.

Claim 12 – Independent claim 12 is directed to a method of notifying a user of the status of a reconfiguration process initiated by changing the number of peripheral devices coupled to a computer via a USB connector. The method includes providing an operating system that automatically detects changes in the number or type of devices coupled to the computer via the USB connector. The operating system generates an internal configuration detection message when a change is detected thereby initiating a device configuration process. The operating system also generates a configuration completion message when the device configuration process has been completed. The method further includes the steps of hooking the internal configuration detection message and notifying the user in real time that a device configuration process is in progress and, thereafter, hooking the internal configuration completion message and notifying that the device configuration process is complete and it is safe to change the number or type of peripheral devices coupled to the computer via the USB connector.

A description of the method embraced by claim 12 is found at the same portions of the Specification and drawings as discussed above in connection with Claim 11.

Claim 13 – Independent claim 13 is directed to a method of avoiding crashes in a

computer system. The method includes the steps of providing a USB configuration notification unit having a message handler and an indication unit. The configuration notification unit monitors internal configuration messages generated by the operating system related to configuration processes and provides a display output when a configuration process is in progress for a USB device so that the user is provided with information in real time whether it is safe or unsafe to plug or unplug a USB device to the computer system.

The message handler and indication unit of the present invention are described specifically in paragraphs [0054] and [0055] of the Specification, and are shown in FIGS. 13 – 15. Other support for the limitations of Claim 13 is in the portions of the Specification that have previously been identified.

Claim 28 - Claim 28 is directed to a configuration notification program for enhancing the operation of a computer system having a USB port and an operating system having (1) a graphical user interface, (2) the capability of monitoring the USB port and generating an internal message when a device is connected to the port, and (3) the capability of configuring a device connected to the USB port and generating an internal message indicating that the configuration has been completed. The notification program comprises a message handler for hooking the internal messages generated by the operating system, and an indication unit for generating and displaying in real time information indicating whether a device coupled to the computer via the USB port has been configured, such that the user is alerted when there is an enhanced risk that coupling or uncoupling a device to USB port will cause a system crash because a configuration process is underway.

Support for the recited configuration notification program is found in the Specification at paragraphs [0041] – [0055] and related drawings.

There are no "means-plus-function" or "step-plus-function" claim elements under 35 U.S.C. § 112, sixth paragraph, in any of the claims. Therefore, no discussion under 37 C.F.R. § 41.37(c)(1)(v) is required.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

All of the claims of the application are rejected as being "obvious" under 35 U.S.C.

§ 103(a). There are no other rejections of any of the claims. The examiner's rejections, as set forth in the Final Office Action dated April 9, 2004, (hereinafter the "FAO") are as follows:

Rejection No. 1 - Claims 1 – 13, 15 – 16, 18 – 20 [sic] and 27[sic] – 29.[2] These claims were all rejected as being obvious over "admitted prior art" in combination with U.S. Pat. No. 5,953,010 to Kampe et al. and U.S. Pat. No. 5,386,360 to Wilson et al. See FAO, paragraph nos. 13 – 20.

Rejection No. 2 - Claims 14, 17, 21 – 23, 25, 26 and 30. These claims are all rejected as being obvious over "admitted prior art" in combination with U.S. Pat. No. 5,953,010 to Kampe et al., and U.S. Pat. No. 5,386,360 to Wilson et al., as in Rejection No. 1, further in view of U.S. Pat. No. 6,466,981 to Levy. See FAO, paragraph nos. 21 – 22.

VII. ARGUMENT

A. Introduction

The emergence of computers running operating systems having "plug and play" capability, along with the widespread acceptance of universal serial bus ("USB") architecture, has been a boon to computer users. All sorts of peripheral devices can now be connected and disconnected from the computer system with a standardized connector, without need to "reboot" the system or to manually install drivers or otherwise manually reconfigure the system. In such computer systems, the connection or disconnection of peripheral devices via the USB port is automatically detected by the operating system, any necessary peripheral device drivers are loaded or unloaded, and any other necessary changes to the system configuration are implemented with minimal or no user involvement.

The ease and convenience of USB and plug and play technology created a new problem, recognized by the inventors, that is addressed by the present invention: it may not be safe to

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[2] Claim 18 is dependent on claim 14. Claim 14 is included in the examiner's "Rejection No. 2." Since claim 18 adds to claim 14, any obviousness rejection of claim 18 must show at least everything that is required to reject claim 14. Therefore, applicant *assumes* that claim 18 is covered by "Rejection 2" rather than "Rejection No. 1" and will treat it as such. In addition, "Rejection No. 1" purports to include claims 19, 20, and 27, each of which were cancelled prior to the final Office Action.

change device connections while the operating system is in the process of reconfiguring the computer system – a process that can take several seconds or more. While operating systems are becoming more robust, changing device connections while the system is reconfiguring itself can cause the computer to "crash," and the inventors have determined that the likelihood of a system crash appears related to the number and types of peripheral devices connected. The use of USB devices with personal computers has become more prevalent in general, and specifically with portable computers (including notebook, laptop and tablet computers). This trend has complicated the problem, as users connect and disconnect devices with greater frequency than ever.

Applicant, which designs and manufactures various types of personal computers (PC's) which use the Windows operating system, identified a particular problem of system crashes associated with the plugging and unplugging of peripheral devices connected via USB ports while the ports are being reconfigured. Applicant further determined that the problem was exacerbated by the use of a compound hub, which provides various types of device ports, connected to a PC via a USB port. Applicant also recognized that the only notice provided by the Windows operating system concerning configuration of a device port, namely the ubiquitous "system busy" hourglass icon, was inadequate, inaccurate and ambiguous, and, therefore, ineffective in averting crashes associated with USB port reconfiguration.

The present invention is directed to solving these problems. In broad terms, it does so using software which intercepts or "hooks" internal messages generated by the computer operating system associated with changes to system configuration, and then, using the intercepted messages to generate a display or other notification, alerting the user when it is unsafe to plug or unplug a peripheral device in real time. The examiner has failed to show that any of these problems, which constitute the *starting point* for the present invention, were known in the prior art. Thus, for example, the background problems described in paragraphs [0006] – [0008] of the Specification are not shown by the examiner to be known problems, nor is there any admission anywhere in the Specification, or in the prosecution history, that these problems were known.

The present application points out that any notification provided by a "system busy" hourglass (or equivalent) icon appearing some time after a device is plugged into a USB port is inadequate because, *inter alia,* it: (1) does not constitute a warning to the user that the USB port

is being configured, (2) does not suggest there is danger in plugging or unplugging devices while the hourglass is displayed, and (3) does not respond in real time. As any user of the ubiquitous Windows operating system appreciates, the hourglass symbol appears many times for many reasons, such that its appearance is ambiguous. The only implication of the hourglass icon is that the system *may* not be immediately responsive to further inputs. The hourglass does not warn the user that taking certain actions when the hourglass is displayed may cause the system to crash. Moreover, the hourglass symbol is not updated in real time. It is these multiple deficiencies with the "system busy" icon which, in part, led to the present invention.

None of the prior art relied upon by the examiner recognizes or attempts to solve the problems addressed by the present invention. The examiner has simply cobbled together rejections by combining disconnected and widely disparate prior art references, relying heavily on "admissions" that were never made. Applicant respectfully submits that the examiner has failed to show that there was any motivation or suggestion to combine references in the manner set forth in the rejections. Accordingly, all of the rejections should be reversed.

B. Applicable Law

In *In re Kotzab,* 217 F.3d 1365, 1369; 55 USPQ2d 1313, 1316 (2000), the Federal Circuit summarized the law applicable to "obviousness" rejections under 35 U.S.C. § 103(a). The summary is particularly pertinent to the present case, because it so clearly describes the very errors made by the examiner:

> "A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. See *Dembiczak,* 175 F.3d at 999, 50 USPQ2d at 1617. Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one 'to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher.' Id. (quoting *W.L. Gore & Assocs., Inc. v. Garlock, Inc.,* 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983)).

> "Most if not all inventions arise from a combination of old elements. See *In re Rouffet,* 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457 (Fed. Cir. 1998). Thus, every element of a claimed invention may often be found in the prior art. See id. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. See id.

Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. See *In re Dance,* 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); *In re Gordon,* 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. See *B.F. Goodrich Co. v. Aircraft Breaking Sys. Corp.,* 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996).

> "The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved. See *Dembiczak,* 175 F.3d at 999, 50 USPQ2d at 1617. In addition, the teaching, motivation or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references. See *WMS Gaming, Inc. v. International Game Tech.,* 184 F.3d 1339, 1355, 51 USPQ2d 1385, 1397 (Fed. Cir. 1999). The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. See *In re Keller,* 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981) (and cases cited therein). Whether the Board relies on an express or an implicit showing, it must provide particular findings related thereto. See *Dembiczak,* 175 F.3d at 999, 50 USPQ2d at 1617. Broad conclusory statements standing alone are not 'evidence.' Id."

Here, as in Kotzab, the invention is relatively easy to understand once it has been explained. The Federal Circuit has repeatedly cautioned against the enhanced danger of using hindsight in such circumstances. Unfortunately, the examiner has ignored this command and has fallen into the trap of using the application as a roadmap to guide him in selecting isolated bits and pieces from the prior art to put together the claimed combination. The examiner's approach is clearly at odds with decades of legal precedent. In the words of the Court, the examiner has entered the, "tempting but forbidden zone of hindsight." See, *e.g., In re Dembiczak,* 175 F.3d 994, 999, 50 USPQ2d 1614, 1616 (Fed. Cir. 1999). See also, *In re Lee,* 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).

In *In re Sponnoble,* 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA 1969), the court made the following observations:

> "It should not be necessary for this court to point out that a patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is *part* of the 'subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 U.S.C. 103. *In re*

Antonson, 47 CCPA 740, 272 F.2d 948, 124 USPQ 132; *In re Linnert,* 50 CCPA 753, 309 F.2d 498, 135 USPQ 307. The court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is, we must view the prior art without reading into that art appellant's teachings. *In re Murray,* 46 CCPA 905, 268 F.2d 226, 122 USPQ 364; *In re Sporck,* 49 CCPA 1039, 301 F.2d 686, 133 USPQ 360 . The issue, then, is whether the teachings of the prior art would, *in and of themselves and without the benefits of appellant's disclosure,* make the invention as a whole, obvious. *In re Leonor,* 55 CCPA 1198, 395 F.2d 801, 158 USPQ 20."

Here, the recognition of the problem was an important motivating factor in creating the invention. Unfortunately, the examiner has turned the law on its head, ignoring the fact that the problem solved by the present application was identified by the applicants, and the relying extensively on the instant Specification for the only articulated motivation to solve the "problem."

C. Rejection No. 1 - Claims 1 – 13, 15 – 16, 28 and 29 [3]

1. Argument Applicable to All Claims Covered by This Rejection.

The first rejection, which is applicable to Claims 1 – 13, 15 – 16, 19 – 20, 28 and 29, are based on a combination of "admitted prior art" (also referred to by the examiner as "applicant admitted prior art" or "AAPA") with U.S. Pat. No. 5,953,010 to Kampe et al. (hereinafter "Kampe") and U.S. Pat. No. 5,386,360 to Wilson et al. (hereinafter "Wilson").

a. "Admitted Prior Art"

According to the examiner, *the admitted prior art* includes "PC" computers with USB ports, graphical displays, and operating systems which monitor USB ports for changes in topology. Applicant does not deny this. Nor does applicant deny that the prior art operating systems create a visual display in the form of an hourglass icon some variable time after a USB device is plugged or unplugged from the USB port. As discussed above, and as pointed out in the Specification (see, *e.g.,* paragraph [0007]) the hourglass icon is ambiguous, and there is no real-time relationship between the display of the hourglass icon and whether it is safe to plug or unplug USB devices. Many system events trigger the display of the same icon, and the examiner has failed to show that there is any user association linking display of the "system busy" icon and

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[3] As noted above, claim 18 will be addressed in connection with "Rejection 2."

safety of changing peripheral devices. Since the hourglass icon is not used to alert users concerning the safety of changing peripheral devices, the Specification points out that there can be "a significant time delay before the hourglass icon is displayed by the system." (Specification [0007].)

Referring to FIGS. 11A and 11B, the examiner next asserts the applicant has admitted that the hourglass is displayed *because of the message handling capability of the operating system.* (See, *e.g.,* FOA, paragraph 13.) **There is no such admission.** There is nothing in FIGS. 11A or 11B, (or in the related discussion found at paragraphs [0045] – [0047] of the Specification) which relates the message generation/handling capability of the operating system to the creation of the hourglass display, or any other type of display associated with port configuration.

The examiner further states that the applicant admits "that prior art systems changed the cursor icon *to prevent user computer action during the configuration process.*" (FAO, paragraph 7, emphasis added.) **There is no such admission anywhere to be found in the application or in any paper submitted to the USPTO**. The application emphatically and unequivocally states that the display of an hourglass icon *does not* prevent user action during a configuration process, *and would not have been interpreted by users as representing a warning.* Nor does the display of the hourglass icon in any way suggest to the user that plugging or unplugging a peripheral device from a USB port might cause a system crash.[4] (Specification, paragraphs [0006] – [0008].) The ambiguity of the hourglass icon in combination with the fact that it does not function in real time is part of very problem being solved. There would have been no need for the present invention if the admitted prior art "prevented" action, as the examiner erroneously suggests.

The examiner contends that "the references combined with the AAPA clearly shows that the problems of slow and ambiguous notification systems were notoriously well known in the

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[4] Perhaps in recognition that the applicant never admitted this, the examiner goes on to assert: "It is inherent ... that this notification is intended to signal to the user that a system process during [sic] which the user *will be prevented from further action.*" (Id., emphasis added.) Despite the examiner's assertion, there is nothing in the record which in any way suggests that the hourglass icon in any way *prevents* anything. The examiner has failed to show that the hourglass has any particular meaning or alerts users that there is an enhanced risk of system crashes.

art, and that the solutions to these problems were also well known." (FOA, paragraph no. 3.) While this is a critical contention, it is not clear what the examiner is referring to. If the examiner contends that these "notoriously well known" problems, and their solutions, are within the admitted prior art, he is wrong. **The applicant has made no such admission.** In addition, applicant submits that there is nothing in any of the prior art which supports this contention, and the examiner has failed to point to any specific portion of any reference which lends support to this statement.

It is clear that the examiner is using the teachings of present application to find motivation to combine references, relying on the articulation of the problems identified by the applicant as a road map. In doing so, the examiner has converted teachings concerning the sources of the invention into "admissions" about what was known. Thus, the statement that "the problems of slow and ambiguous notification systems were notoriously well known" is totally unsupported. The only basis for this and other, similar statements, is the description of the present application.

b. The Kampe Patent

The examiner then points to Kampe as allegedly teaching how to cure the problems *identified by the applicant*. According to the examiner Kampe teaches the interception of "unintelligible internal text status messages, before they can be displayed" [sic]. The examiner asserts that it would have been obvious to apply the teachings of Kampe with the admitted prior art, "in order to create a system that will clearly notify the user promptly of the progress of a configuration process or problems with the configuration of the computer I/O port." (FAO, paragraph no. 13.) The examiner offers no explanation of why any one would be motivated to do this. Clearly, the examiner makes this combination to solve the problem that is identified in the application, based on the teachings of the application.

Applicant submits that the Kampe reference is not at all germane what is claimed. It is not at all concerned with warning computer users about the enhanced risk of a system crash. Rather it "produces a much simpler and friendlier indication of the progress of a normal system startup." (Kampe, col. 5, lines 24 – 26.) It also assists users in determining, after the fact, the cause of a system crash by providing one or more of the following: notice of a failure, an event log or a display denoting the point in the start-up process at which the failure occurred. Needless

to say, none of these are intended to *prevent* crashes from occurring. [5]

Kampe discloses a program which intercepts <u>text messages</u>[6] that are generated by the system and that are directed to the system display during the system initialization or "boot-up" process, and substitutes icons or other indicators concerning the status of the initialization process which are more informative and user friendly.[7] (See, *e.g.,* Kampe, col. 1, lines 45 – 65; col. 3, lines 15 – 22.) Kampe is not concerned about system monitoring after the operating system has been loaded and "boot-up" completed.

Kampe specifically teaches that the information need only be updated "every few seconds", and that the update intervals of "20 to 40 seconds" are within the scope of their invention. (Kampe, col. 3, lines 32 – 37.) These time frames may be adequate for a program which is intended to monitor the progress of system initialization, but are inadequate to provide the real time notice required to avoid system crashes, as claimed herein. Likewise, Kampe's progress displays may be based on estimates, rather than on monitoring real information. (Col. 8, lines 5 – 14.)

Kampe is completely unconcerned with the status of "plug and play devices" containing no mention of them, or of USB (or other) ports, or of the problem of transient system instability when devices or device ports are being configured. Indeed, there is nothing in Kampe which suggests that they use a dynamically configurable operating system which senses changes in the number of devices coupled to the computer.

Neither the "admitted prior art" nor Kampe recognize the problem of transient system

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[5] Kampe discloses a logging system for recording the initialization process so that any boot-up errors can be identified after the fact by reviewing an event log. While the logging mechanism assists the user in determining the cause of a system crash during the initialization process, it has nothing to do with providing real time information which is useful for the purpose of alerting the user and thereby *preventing* crashes from occurring as a result of user actions.

[6] The examiner contends that Kampe intercepts "internal" messages. This statement is inaccurate, and the inaccuracy is critical because the claims of the present application all relate to the use of *internal messages.* In fact, Kampe teaches the use of "text status messages" that are generated for display on a computer monitor. Because the text status messages generated by the operating system in Kampe would be difficult for most end users to comprehend (*i.e.,* the messages are not user-friendly), the invention substitutes more user-friendly information concerning progress of the system initialization process.

[7] Ironically, Kampe suggests use of the hourglass icon, the ambiguity of which, in part, inspired the present invention. (Kampe, col. 3 lines 46 – 51.)

instability associated with connecting and disconnecting peripheral devices to a computer via a USB port. The known prior art does not suggest any awareness of the problem or of the associated increased risk of system crashes. As noted in the Specification, the admitted prior art assumed that USB ports and devices are stable and no special precautions were required to control the process of connecting and disconnecting devices via a USB port. Thus, part of the invention lies in the recognition of the problem, and in the means for solving the problem. The examiner has failed to show why anyone would be motivated to apply any of the teachings of Kampe to in connection with the monitoring of USB ports.

c. The Wilson Patent

The examiner next admits that: "Both the AAPA and Kampe fail to teach the visual display for notifying the user in real time." (FAO, paragraph no. 14.) The examiner then purports to find this missing piece of the claimed invention in the Wilson patent. However, Wilson is concerned with a much different problem than *either* the admitted prior art *or* Kampe, and again, the examiner fails to show why the teachings of Wilson have any relevance, or why someone of ordinary skill in the art would have been motivated to combine it with the other references.

Wilson is directed to computer-based security system which monitors and controls various sensors, alarms, smoke detectors, etc., connected to the system using a specialized, proprietary "I/O Bridge", "which interfaces signals from electronically-controlled devices to the PC via the PC's keyboard port." (Wilson, col. 3, lines 40 – 42.) The I/O bride is designed to be controlled by a specific application software program which allows a user to specify which alarms, etc, should be controlled and/or monitored.

Wilson describes the use of background "driver" programs, referred to as "INIT" programs, which are associated with monitoring and controlling the I/O devices. (Wilson, col. 5, lines 25 – 26.) The Wilson patent assumes, throughout, that these programs have already been loaded into system memory, and makes no mention of any problems associated with connecting or disconnecting devices to the system while the various "INIT" driver programs are being loaded or reconfigured. Once in place, the INIT programs monitor and display information from a device in real time, just as a keyboard driver can display in real time keystrokes entered by a user.

The Wilson reference is unremarkable. Applicant does not deny that computers are able

to process data received from peripheral devices in real time once the devices are properly installed and the system has been configured to receive their inputs. Thus, typing on a properly installed computer keyboard produces a display of the typed text in real time. Wilson shows no more than this. It has nothing to do with providing status information about the progress of loading or unloading of device drivers and any related system reconfiguration that is necessary when a change in USB topology has been detected. The combination of the application software and hardware in Wilson also allows the user to enable or disable external devices *without the need to physically connect or disconnect the device or reconfigure the system.* Effectively it is shows the unremarkable capability of acting as a software "switch."

Wilson is concerned with monitoring and control of events and devices which are *external* to the computer. It is much different to monitor and display in real time a temperature reading from an *external* temperature sensor, than to monitor and display in real time the status of the *internal* configuration of a computer's operating system to ensure that unsafe device changes are not made.

Wilson is not at all concerned with problems associated with plugging and unplugging devices to device ports that require system reconfiguration. The Wilson patent makes no mention of USB ports or devices, nor does it make any mention of the problem of system crashes due to connecting or removing peripheral devices to a USB port while it is being configured by the operating system. Wilson does not disclose the use of a dynamically reconfigurable operating system.

The examiner fails to explain why someone skilled in the are would be motivated to combine the teachings of the Wilson patent with any of the other references. The examiner asserts that Wilson teaches: "that it was notoriously well known to show progress to subsystem status changes in real time" and "to present the user real time information about what is occurring in the system" and "it was notoriously well known in the art at the time of the invention to provide real-time information to the user about system status." (FAO, paragraph no. 8.) Applicant respectfully disagrees. Wilson is not at all concerned with internal computer configuration monitoring or changes – it is exclusively focused on monitoring external events and controlling external devices that have been configured. There is no mention of "subsystem status changes" or of "what is occurring in the system" or of internal "system status." The examiner's strained attempt to extrapolate such teachings from the Wilson patent clearly reveals

that he has entered the "forbidden zone" of hindsight – the only way to see these teachings in Wilson is through a lens wrought by the teachings of the present invention.

d. The Combination of References

To summarize: (1) the only admitted prior art shows that the Windows operating system crudely and inaccurately shows "system busy" status using an ambiguous "hourglass" or similar icon that does not provide information in real time, and does nothing to protect against system crashes associated with connecting and disconnecting devices via a USB port that is undergoing reconfiguration; (2) Kampe shows a system for translating complex text messages being sent to a computer monitor *during system initialization* and converting them to easy to understand icons; and (3) Wilson shows a system for monitoring and controlling peripheral sensors, alarms, monitors and the like using proprietary software, software drivers and an I/O bridge. Each of these references are each directed to much different inventions and situations which have no relationship to one another, and none of them recognize the problems solved by the present invention. There is no explicit suggestion in any of the references which would have lead one of ordinary skill in the art to combine them.

The examiner has failed to show any reason why someone of ordinary skill in the art would combine these references. A critical first step in the motivational process is in the recognition of the problem being solved. Here the examiner fails to show that the problem was known. The examiner's logic for bypassing this requirement is unclear – he either *assumes* that the applicant invention is directed to a known problem, or incorrectly asserts that knowledge of the problem is admitted. Neither of these alternatives is sustainable. There is no admission, nor is there any showing that the problem being solved was known. Simply asserting that something is "notorious" is insufficient to sustain the necessary burden of proof.

Moreover, even assuming the problem had been known prior to the filing of the present application, the examiner has failed to carry his burden of showing motivation to combine the references to render the claimed inventions obvious. The only way to make the necessary combination is to broadly extrapolate what each of the references teaches, using the present application as a guide. The examiner's approach is tantamount to saying because the alphabet is known, Hamlet is obvious. In order to even approach the present invention, specific isolated teachings of the different references must be selectively chosen, removed from their context, and then reassembled in just the right way. The examiner asserts what he thinks would be obvious,

but fails to offer a legally sustainable explanation of why.

2. Discussion of Specific Claims

Claim 1

Independent claim 1 requires the presence of "a configuration notification program" residing on a computer that receives *internal* configuration messages and uses them to create a visual display "for notifying the user in real time when it is unsafe to couple or uncouple a plug and play device" to the computer. None of the prior art shows or suggests the use of a configuration notification program, let alone a program that meets the specific requirements of claim 1. The "admitted prior art" makes no mention of a configuration notification program. The Specification clearly indicates that such a program is at the heart of the invention.

Kampe does not show or suggest a program that receives *internal* configuration messages, or that in any way is related to notifying the user when it is safe or unsafe to plug or unplug any device of any sort. (It is noted that in the FOA the examiner incorrectly describes Kampe's messages as "internal.") Wilson does not show or suggest a configuration notification program that relies on the receipt of internal configuration messages to notify the user when it is unsafe to couple or uncouple a plug and play device to the computer.

Despite the fact that this critical aspect of the invention of claim 1 is missing from all of the references relied upon by the examiner, the examiner asserts that: "It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the notification system of Kampe et al. with the notification and USB plug and play of the AAPA, in order to create a system that will clearly notify the user promptly of the progress of a configuration process, or problems with the configuration of the computer I/O system." (FOA, paragraph 13.) No where does the examiner explain any suggestion or motivation for this combination. No where does the examiner show that the problem addressed by the present invention – namely, the enhanced risk of system crashes while the computer undergoes configuration processes for plug and play devices – was a known problem.

Claim 2

Claim 2 is dependent on claim 1. Having failed to show that "configuration notification program" of claim 1 is known or obvious in view of the prior art, *a fortiori,* the examiner has not shown that it is known or obvious to have such a program with both a "message handler" which

hooks internal configuration messages, and an "indication unit" coupled to the output of the message handler that generates a visual display on the computer notifying the user when it is unsafe to couple or uncouple a plug and play peripheral device. The examiner asserts that the applicant admits that the prior art includes a mouse controller which intercepts internal messages and which relies on such messages to change the appearance of the mouse cursor when the system is busy. There is no such admission.

Claim 3

Dependent claim 3 requires that the indication unit of claim 2 have the ability to generate three different displays as follows: (a) a first display indicating that it is safe to remove or insert a device, (b) a second display corresponding to notification that the configuration process is in progress, and (c) a third display corresponding to notification that the configuration process is complete. Needless to say, none of the references show a configuration notification program that can create the three specific displays required by claim 3. The examiner broadly asserts that because it is known to give visual display notice of certain events, this claim is obvious. Applicant is not claiming the broad concept of providing visual notice. It is claiming specific notices associated with specific events.

Claim 5

Claim 5, which is dependent on claim 4 recites a compound hub. See discussion of independent claim 7, below, which also includes this requirement.

Claim 6

Claim 6, which is dependent on claim 2, specifies that the computer indication unit generates an audio signal indicative of the status of the configuration process. The examiner broadly asserts that because it is known to give audio notice of certain events, such as described in Wilson, this claim is obvious. Applicant is not claiming the broad concept of providing audio notice. It is claiming a specific notice associated with a specific event.

Claim 7

Independent claim 7 is directed to a computer system having a USB port and a compound hub having at least one USB connector and at least one non-USB connector coupled to the USB port. Claim 7 recites the presence of a message handler residing on the computer for hooking internal configuration messages related to (a) changes in the USB topology and (b) completion of a USB configuration processes. Claim 7 further recites an indication unit residing on the

computer responsive to the output of the message handler, which generates a display in real time notifying the user whether it is unsafe to remove or insert a plug and play device.

While claim 7 uses different wording, it recites many of the same essential features as claim 1. Applicant will not reiterate the arguments given above in respect to claim 1, except to say the apply with even greater force because claim 7 is narrower in certain respects. As depicted in FIG. 5A, applicant admits that compound hubs connected via USB port and having both USB and non-USB connectors were known in the prior art. The problem created by the use of such compound hubs, which was not recognized in the prior art, played a role in motivating the inventors to develop the invention of claim 7. The present application teaches that the problem of system crashes appears to be more pronounced when coupling non-USB plug and play devices via a USB compound hub. This teaching, which provides a part of the motivation for the present invention, is absent from the known prior art.

Claim 8

Dependent claim 8 adds a similar requirement to claim 7 that claim 3 adds to claim 2 – namely that three different notices be provided – and is patentable for at least the same reasons as are stated above in reference to claim 3.

Claim 11

Independent claim 11 is directed to a method of notifying a computer user concerning the status of a USB port. It requires the detection and processing of internal configuration messages and notifying the computer in real time that: (1) a configuration process is in process, (2) a configuration process is complete, and (3) it is safe to change the number or type of peripheral devices coupled to the computer.

This claim is similar in many respects to claims 1, 3, 7 and 8, and is patentable for at least the same reasons as are described above in reference to these claims. The method recited in claim 11, requires determining if an internal configuration message generated by the operating system corresponds to a change in the number or type of peripheral devices requiring that the user be notified. This claim contemplates that not all changes will result in notice to the user. No such capability is shown in the prior art.

Claim 12

Independent claim 12 is a method claim that requires hooking internal configuration messages generated by an operating system as a result of changes to the number of peripheral

devices coupled to a computer via a USB port and notifying the computer user: (1) in real time that device configuration process is in progress, and (2) that the process is complete and that it is safe to couple or uncouple devices to the computer via a USB connector.

This claim is patentable for at least the same reasons as claim 1, which will not be reiterated.

Claim 13

Independent claim 13 is directed to a method of avoiding crashes in a computer system. It requires the use of a USB configuration notification unit that has a message handler and an indication unit. The configuration notification unit monitor internal configuration messages generated by the computer operating system related to configuration processes, and provides a computer display that is updated in real time alerting the user whether it is safe to plug or unplug a USB device to the computer system.

As discussed in detail in connection with claim 1, the prior art of record does not show or suggest the use of a USB configuration notification unit that provide a real time display alerting the user whether it is safe or unsafe to plug or unplug a USB device to the computer system. The problem of system crashes associated with plugging or unplugging USB devices while the system is being configured is not disclosed in the prior art of record and, therefore, there is no motivation shown for providing a notification unit to "solve" this problem.

Claims 15 and 16

Claim 15, which is dependent on claim 13, requires that the display unit output provide at least two unique indicators, one of which alerts the user that a USB port is being configured, and the other of which alerts the user that it is safe to plug or unplug a device to the computer via the USB port. No such indicators are shown in the prior art. It is noted the system busy hourglass icon is used for many purposes and does not uniquely indicate anything about the USB port. Claim 16, which is dependent on claim 15, adds the requirement of a third indicator advising the user that the USB configuration has been completed.

Claim 28

Independent claim 28 is directed to a configuration notification program for enhancing the operation of a computer system having at least one USB port and an operating system with a graphical user interface. The operating system monitors and configures the USB port and generates internal messages when a device is coupled to the USB port, and when the port has

been configured. The notification program comprises a message handler for hooking the internal messages generated by the operating system, and an indication unit for generating and displaying in real time whether a device coupled to the USB port has been configured. This alerts the user whether there is an enhanced risk of a computer crash because a device configuration process is underway.

The configuration program of claim 28 is similar to claim 2 and, therefore, Applicant will not reiterate the arguments in favor of patentability.

D. Rejection No. 2 - Claims 14, 17, 18, 21 – 23, 26 and 30.

Argument Applicable to All Claims Covered by This Rejection.

The second rejection, which is applicable to Claims 14, 17, 18, 21 – 23, 26 and 30, is based on the same combination of "admitted prior art" and references used in Rejection No. 1, further in view of U.S. Pat. No. 6,466,981 to Levy (hereinafter "Levy"). (FAO, paragraph no. 21.)

Applicant will not reiterate the discussion set forth above in connection with Rejection No. 1. The examiner has applied the references in the same way as above. The Levy patent is said to supply the idea of using an icon in a system tray "to provide notification the user of system information [sic]." (FAO, paragraph no. 22, referring to col. 10, lines 18 – 20 of Levy.) Levy is also said to teach using different colors to indicate differing states. Applicant acknowledges that changeable system tray icons of various colors were known prior to its invention.

Levy is concerned with Internet messages and the examiner gives no reason why to combine it with any of the other references. Using hindsight, the examiner presumes that the prior art suggests giving real time notice of the status of USB ports, and then finds the piece that is missing in Levy. There is nothing in Levy which generally describes what types of notices can or should be placed in the system tray or when to use different colors. The examiner has not given a reason for combining this reference with the others.
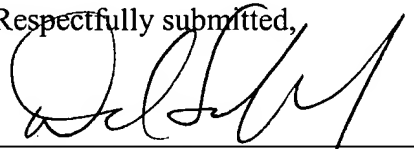
Claim 18

Claim 18 is dependent on claim 14. It recites the use of text messages within the system tray icon. Levy does not disclose the use of system tray icons with test messages.

E. Conclusion

The examiner's rejections rest on improper hindsight reconstructions of the applicant's inventions, and ignore the fundamental legal requirements concerning what must be shown to properly combine references. The examiner has stretched and distorted what the references actually teach, relied on non-existent admissions and, when all else failed, simply made unsupported assertions that aspects of invention, or of the problem being solved by the invention, are "notorious." The examiner's failure to give any weight to the applicant's recognition of the problem being solved goes directly to the heart of his error. When viewed in a legally correct manner, the prior art relied upon does not come close to making what is claimed obvious. It is respectfully requested that the rejections be reversed.

December 20, 2004

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VIII. APPENDIX OF THE CLAIMS INVOLVED IN THE APPEAL

1. A plug and play computer system, comprising:

a) a computer having a visual display and at least one exterior serial bus port for coupling at least one peripheral device to said computer;

b) an operating system residing on said computer programmed to dynamically configure the computer system, said operating system having a subroutine for generating a first internal configuration message indicative of said operating system sensing a change in the number of devices coupled to said computer and a subroutine for generating a second internal configuration message indicative of said operating system completing a configuration process; and

c) a configuration notification program residing on said computer for receiving said first and said second internal configuration messages and creating a visual display for notifying the user in real time when it is unsafe to couple or uncouple a plug and play device to said computer.

2. The system of Claim 1, wherein said configuration notification program comprises:

a message handler residing on said computer, said message handler hooking said first and said second configuration messages, said message handler including a message analyzer unit and a state determination unit arranged to provide a first output signal when the configuration process is in progress and a second output signal when the configuration process is completed; and

an indication unit residing on said computer and coupled to the output of said message handler, said indication unit generating a visual display notifying the user when it is unsafe to couple or uncouple a plug and play device to said computer.

3. The system of Claim 2, wherein said indication unit generates a first display indicating that it is safe to remove or insert a device, a second display corresponding to notification that the configuration process is in progress, and a third display corresponding to notification that the configuration process is complete.

4. The system of Claim 2, wherein said system utilizes a universal serial bus interface and wherein said serial bus port is a universal serial bus port.

5. The system of Claim 4, further comprising a compound hub and wherein said compound hub is coupled to said port via a universal serial bus cable.

6. The system of Claim 2, wherein said computer includes a audio output port and said indication unit generates an audio signal to said audio output port indicative of the status of the configuration process.

7. A computer system, comprising:

    a) a computer having at least one USB port;

    b) a compound hub having an USB connector coupled to said USB port of said computer via a USB cable, said hub having at least one USB connector port and at least one non-USB peripheral device port;

    c) an operating system with USB interface capability residing on said computer, said operating system generating a subroutine for generating a first internal configuration message indicative of said operating system sensing a change in the bus topology and a subroutine for generating a second internal configuration message indicative of said operating system completing a configuration process for said bus topology;

    d) a message handler residing on said computer for hooking said first and second internal configuration messages, said message handler including a message analyzer unit and a state determination unit arranged to provide a first output signal when the configuration process is in progress and a second output signal when the configuration process is completed; and

    e) an indication unit residing on said computer and responsive to the output of said message handler, said indication unit generating a visual display in real time notifying the user whether it is unsafe to remove or insert a plug and play device.

8. The system of Claim 7, wherein said indication unit generates a first display indicating that it is safe to remove or insert a device, a second display indicating that a configuration is in progress, and a third display indicating that the configuration process is complete.

9. The system of Claim 8, wherein said compound hub has a plurality of non-USB peripheral device ports.

10. The system of Claim 9, wherein said compound hub replicates the function of a mouse port, a serial port, a printer port, and a keyboard port.

11. A method of providing notification of the status of a configuration process of an operating system of a computer having at least one USB port enabling the computer to be coupled to peripheral devices, comprising the steps of:

(a) detecting an internal configuration message generated by the operating system whenever the number of the peripheral devices coupled to the computer via the USB port changes;

(b) determining if said internal configuration message corresponds to a change in the number or type of said peripheral devices requiring that a user be notified;

(c) notifying the user in real time that a configuration process is in progress when it is determined that the change requires that the user be notified;

(d) detecting an internal configuration completion message generated by the operating system when a peripheral device configuration process is completed;

(e) determining if said internal configuration completion message corresponds to a change in the number or type of said peripheral devices requiring that the user be notified that the configuration process is completed;

(f) notifying the user in real time that the configuration process is complete when it is determined that said internal configuration completion message requires that the user be notified; and

(g) notifying the user that it is safe to change the number or type of peripheral devices coupled to the computer.

12. A method of notifying a computer user of the status of a reconfiguration process initiated by coupling or uncoupling a peripheral device to a computer via a universal serial bus connector (USB), comprising the steps of:

(a) providing an operating system that automatically detects whenever the number or type of peripheral devices coupled to the computer via said USB connector changes, said operating system generating an internal configuration detection message whenever the number or type of

peripheral devices coupled to the computer via said USB connector changes such that a device configuration process is initiated and a configuration completion message when the device configuration process is completed;

(b) hooking said internal configuration detection message;

(c) notifying the user in real time that a device configuration process is in progress;

(d) hooking said internal configuration completion message;

(e) notifying the user that the device configuration process is complete and that it is safe to change the number or type of peripheral devices coupled to the computer via said USB connector.

13. A method of avoiding crashes in a computer system comprising the step of:

providing a USB configuration notification unit having a message handler and an indication unit, said configuration notification unit monitoring internal configuration messages generated by an operating system related to a configuration process, said configuration notification unit providing a computer display output indicating when a configuration process is in progress for a USB device;

wherein said computer display output is updated in real time so that a user is provided information in real time concerning whether it is safe to plug or unplug a USB device to the computer system.

14. The method of claim 13 wherein said computer system comprises a graphical user interface including a representation of a system tray, and said computer display comprises an icon which is resident in said system tray.

15. The method of claim 13 wherein said computer display output comprises at least two unique indicators, one of said indicators for alerting the user that a device connected to the computer via a USB port is being configured and another of said indicators for alerting the user that it is safe to plug or unplug a device to said computer via said USB port.

16. The method of claim 15 wherein said computer display output comprises a third indicator for advising the user that device configuration has been completed.

17. The method of claim 14 wherein the color of said icon is changed by said configuration notification unit depending on the state of said USB port and the configuration state of the devices coupled or uncoupled to said USB port.

18. The method of claim 14 wherein textual information is provided within said icon depending on the state of said USB port and the configuration state of the devices coupled or uncoupled to said USB port.

21. The system of claim 2 wherein said operating system provides a graphical user interface having a system tray, and wherein said indication unit comprises an icon which is resident in said system tray.

22. The system of claim 21 wherein said icon displays a first color when it is safe to couple or uncouple a plug and play device to said computer system and displays a second color when it is unsafe to couple or uncouple a plug and play device to said computer system.

23. The system of claim 3 wherein each of said first, second and third displays are located in a system tray of a graphical user interface.

24. The system of claim 6 wherein said audio output port is coupled to a speaker.

25. The computer system of claim 7 wherein said visual displays are located in a system tray of a graphical user interface.

26. The computer system of claim 8 wherein said visual displays are color coded.

28. A configuration notification program for enhancing the operation of a computer system having at least one USB port and an operating system having a graphical user interface, said operating system having the capability of monitoring said USB port, generating an internal message when a device is coupled to the computer via said USB port, configuring a device

coupled to the computer via said USB port, and generating an internal message indicating that configuration of the device has been completed, said program comprising:

a message handler for hooking said internal messages,

a indication unit for generating and displaying in real time information indicating whether a device coupled to said computer via said USB port has been configured, such that a user of the computer is alerted whenever there is an enhanced risk that coupling or uncoupling a device to said computer via said USB port will cause a system crash because a configuration process is underway.

29. The notification program of claim 28 wherein said indication unit generates a unique display indicating that it is safe to couple or uncouple a device to said computer via said USB port.

30. The notification program of claim 28, wherein said graphical user interface comprises a system tray and wherein said indication unit displays an icon in said system tray indicating in real time whether a device coupled to said computer via said USB port is being configured.

IX. APPENDIX OF EVIDENCE

None.

X. APPENDIX OF RELATED PROCEEDINGS

None.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Rajesh SUNDARAM, et al.

Serial No.: 09/467,569

Filed: December 20, 1999

For: *Method and System for Reliable*
        Device Configuration in a
        Computer System
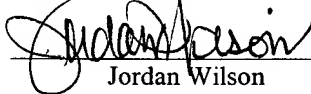
Group Art Unit: 2182

Atty. Docket No.:   6487/54045

TRANSMITTAL OF APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith for filing is an Appeal Brief Under 37 CFR § 41.37 in the above-identified application. Also enclosed is a Petition for a One-Month Extension of Time. A check in the amount of $620.00 covering the fee for filing an Appeal Brief and the extension fee is attached.

The Commissioner is hereby authorized to charge any additional fees which may be required in this application under 37 C.F.R. §§1.16-1.17 during its entire pendency, or credit any overpayment, to Deposit Account No. 501395. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 501395. This sheet is filed in duplicate.

December 20, 2004
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